DOCUMENT RESUME

ED 253 581 TM 850 127

AUTHOR Buchanan, Aaron
TITLE School Improvement in Good School Situations.
INSTITUTION Southwest Regional Laboratory for Educational Research and Development, Los Alamitos, Calif.
REPORT NO SWRL-TN-2-83/19
PUB DATE 15 Nov 83
NOTE 29p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Achievement Gains; *Educational Improvement; Elementary Education; *High Achievement; Mathematics Achievement; Reading Achievement; *School Effectiveness
IDENTIFIERS Instructional Accomplishments

ABSTRACT

The potential for school improvement in schools and districts that score well above state and national averages was explored. Based on elementary reading and mathematics data from a collaborating district, it appears that a three-step school improvement logic can effect improvements in "good" schools. The first step is to collect Instructional Accomplishments Information describing what students are learning in terms of the learning opportunities reflected in the instructional objectives and texts of a given grade and subject. The second step is to use Instructional Risk Reduction Resources as an alternative to "remediation" by treating pivotal skills that will cause difficulty at a later grade if they inadvertently "slip" between the cracks at earlier grades. The third step, E-School Design, builds on the basic reading and mathematics skills established in the first two steps, and moves to obtain excellence and maintain economy in the broad set of elementary schooling subjects: science and technology, composition and communications, art and music, additional languages, and human understandings. For "good" schools, the largest potential for school improvement appears to lie in the E-School part of the school improvement logic. (BW)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED253581

SOUTHWEST REGIONAL LABORATORY TECHNICAL NOTE

DATE: November 15, 1983

NO: TN 2-83/19

BEST COPY AVAILABLE

SCHOOL IMPROVEMENT IN GOOD SCHOOL SITUATIONS

Aaron Buchanan

ABSTRACT

The instructional accomplishments of students in a "good" school district were analyzed with regard to "margins" that exist for further instructional improvement. The analysis yields a methodology that may be particularized for any given school district to plan action for school improvement in situations that are already "good" when "good" is defined by normative comparisons with other schools.

TM 860 127

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

P. A. Milazzo

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

This document is intended for internal staff distribution and use. Permission to reprint or quote from this working document, wholly or in part, should be obtained from SWRL, 4665 Lampson Avenue, Los Alamitos, California 90720

SCHOOL IMPROVEMENT IN "GOOD SCHOOL" SITUATIONS[1]

Aaron Buchanan

National panels have warned that the U.S. is "at risk" educationally. Partly in response, states are moving forward with "educational reform" initiatives. How the alarm and action will translate into improvements in what students know and know how to do is not clear, especially in the elementary grades. That's up to local school districts, we're told. However, if school districts simply follow the tradition of passing the matter of improvement on to teachers and students, schools will be right where they were before the renewed concern with education arose: teachers and students will be doing the best they can, but others will be contending that their best is unsatisfactory.

Ironically, in school situations that are weakest the prospects for improvement efforts are clearest. Schools and districts that historically score near or below state or national averages on standardized tests can improve by increasing their instructional accomplishments in the basics of reading and mathematics. But what about schools and districts that now score well above state and national averages? Is there much potential for school improvement in these situations, and if so, where? This report treats such questions.

BACKGROUND

The study was conducted in cooperation with a school system that scores well above average on national tests. Clearly, the district has the potential to be successful at almost anything it undertakes to teach its students how to do, as long as it does not strive for more than there

---

[1]Joe Lawlor collaborated on analysis of results in reading.

is time and staff to accomplish. But with objectives, programs, and materials in place and with all sorts of options available for new objectives, new programs, and new materials what course of action is reasonable to effect school improvement?

On the basis of SWRL's R&D, the "best bet" logic for any school district concerned with assuring and/or effecting quality and productivity in elementary schooling is in three steps. The steps are defined operationally, in terms of the tools that district personnel can use to implement the logic:

1. Instructional Accomplishment Information (IAI). This instrumentation makes it possible to describe what students are learning, grade by grade and subject by subject, in terms of the learning opportunities reflected in the instructional objectives and texts of a given grade and subject. The information derives from what "is now" rather than from what "should be" or "is elsewhere."

2. Instructional Risk Reduction Resources (IR^3). These resources provide an alternative to "remediation" by treating pivotal skills that will cause difficulty at a later grade if they inadvertently "slip" between the cracks at earlier grades. In general, the resources are applied at grades 2-4 to counter the remedial problems that become prominent at grades 4-6 and protracted thereafter.

3. E-School Design. Public and professional attention in elementary schooling is currently concentrated on reading and mathematics. The first two steps above will establish that the expectations of quality accomplishments in these two subjects are met. From that confidence base it is possible to move to obtain excellence and maintain economy in the broad set of elementary schooling subjects: science and technology, composition and communications, art and music, additional languages and human understandings.

The collaborating district was interested in testing the feasibility of this logic for its situation. By obtaining instructional accomplishment information at grades 2-4, it would be possible to use the

accomplishment information in its own right and also to determine the feasibility of instructional risk reduction resources.

SWRL's Proficiency Skills Inventories in Mathematics and Reading were used to obtain the accomplishment information. The inventories were administered by regular classroom teachers at the end of the school year to all students in grade 2-4 (approximately 80 students at each grade). The Proficiency Skills Inventories are especially well suited for taking a broad view of instructional accomplishments in a subject, because they survey nearly 200 matters at each grade level, all related to what textbooks present and students are likely to have an opportunity to learn. Summary reports of accomplishment information at the student, class, school, and district level were provided to the district. Overall, the information confirms a high quality of instructional accomplishments. On items and skill areas, singly and as a set, the "scores" pile up at the high end of the scale--in the 70%-90% range.

The analysis presented in this report concentrates on pivotal skills at grades 2-4 that have especially strong linkages to development of new skills at the next two or three grade levels. These are the skills that produce a fair amount of risk to the success of skill development across grades when they are not in place. The risk, of course, is that students are not able to make full use of the learning opportunities that lie in the mainstream of instruction if the accomplishments presumed from instruction at previous grade levels have, for one reason or another, been missed. Sometimes, instructional accomplishments are missed simply because the instructional opportunity was not provided. Other times,

instruction may have been provided, but there was not enough practice, or the practice that was provided did not cover a broad enough range of practice items.

We will first present the analysis* for mathematics and then the analysis for reading. We will then discuss the implications of the analyses for school improvement effort.

MATHEMATICS ANALYSIS

General District Accomplishments

In general, the data confirm that students and teachers are accomplishing a great deal at grade level. By the end of grade 2, almost all students know their addition and subtraction facts, they can use ordinal numbers ("fifth," "seventh," etc.) to represent position in line, they know how to count by ones to 1000 and by tens to 100, they recognize the value of individual coins and simple coin combinations, they can use rulers to measure length in whole centimeters or inches, they can read time on a clock face to an hour or half hour, and they recognize names for basic geometric shapes such as triangles, squares, and circles. By

*Some of the performance levels presented in the analysis may vary two or three percentage points from data provided in the PVS District Report. This occurs because the analysis is based on results of all responses to all items, while data in the PVS District report incorporated some minor adjustments made by the PVS computer software to account for isolated instances where a student obviously did not work on entire sections of the inventory.

the end of grade 3, more than 80% of the students can read word names for numbers up to one hundred thousand; they can count by ones or tell which number is more or less than another (to ten thousand); they know the easier multiplication facts; and they can add two 3-digit whole numbers with one or even two renamings ("carries"). By the end of grade 4, more than 80% of the students can read word names for numbers to millions and identify the number itself (although they have a lot more trouble "reading" the number and identifying the word name), they now know their multiplication and division facts, they can read time on a clock face to the nearest minute, and more than 75% can add two or even three 4-digit numbers (they aren't as good with subtraction), or compare two 4-digit numbers using symbols for "greater than" or "less than."

Overall, there is a moderate change in the percentages that reflect general levels of performance from grade 2 to grade 4, from about 80% at grade 2, to 72% at grade 3, and 65% at grade 4. This downward drift in percentages across grades reflects the number of skills and the complexity of each skill, which both increase dramatically from grade 2 to grade 4.

Analysis <u>across</u> grades on specific skills reveals considerable variety in performance that is masked by general "grade level" percentages. For example, 88% of the students at grade 4 answered a question correctly when it involved multiplication or division facts. On the other hand, embedded in the "high" overall grade 2 percentage (80%), only 55% of the students answered a question correctly that involved use of simple common fractions such as 1/3 or 1/4 to describe parts of a

whole. Again, the differences in performance are best explained by the learning opportunities the students have received. Work with common fractions is only just introduced in most textbooks in grade 2, while work on multiplication and division facts has been comprehensively covered twice in textbooks by the end of grade 4.

The data indicate that a general effort that seeks to make improvements in "overall math scores" would be marginally productive in some skill areas. For example, no skills in elementary school mathematics are taught as thoroughly as the counting order for whole numbers or addition and subtraction facts by the end of grade 2, and multiplication and division facts by the end of grade 4. On the average, questions representing order and comparison of whole numbers (which are included in the same skill area with items for recognition of number names and place values) were answered correctly by more than 95% of the students at grade 2, while a question representing addition and subtraction facts was answered by 93% of the students at grade 2, and a question representing multiplication and division facts was answered by 88% of students at grade 4. Other skills such as recognition of coins and simple geometric shapes are also as good as they are going to get; no improvement effort is warranted because it's unlikely that things could get much better. A good argument can be made that multiplication and division facts should approach this level of performance in grade 3 rather than grade 4, but that's getting ahead to another part of the analysis.

Analysis of Pivotal Skills

On skill areas and on many items at each grade, student performance is much lower, but this does not necessarily mean that the skills need a lot more attention than they are getting now. Mathematics instruction, at least as it's represented in mathematics textbooks, has a lot of built-in overlap across grade levels. So relatively low performances this year on some small and fairly restricted units of skill development can often be expected to improve dramatically next year without any serious changes in what teachers are doing. The improvement does not occur spontaneously; it occurs as a result of the structure of learning opportunities from grade to grade.

Only a few performances are cause for concern. These involve pivotal skills at one grade level that greatly affect what teachers at the next grade level will be able to accomplish. These pivotal skills are ones where small amounts of concentrated instruction and practice should make big differences on the flow of instruction from primary to intermediate grades, while the amount of time required to provide this kind of instruction and practice should not have an adverse effect on the breadth of other things that individual teachers hope to accomplish. For now the pivotal skills appear to be best bets for instructional improvement efforts and are the focus of the grade-by-grade analysis that follows.

Grade 2

Addition and Subtraction with Renaming

This pivotal skill is a part of a larger skill area, "addition and subtraction algorithms," where the general level of performance (78%) is deceptive. Actually students did very well (around 90%) on addition and subtraction questions that did not require the renaming of place values. On questions where renaming was required, about 62% of the students answered the addition question correctly, while 52% answered the subtraction question correctly.

ITEM 21	ITEM 23
37 +44	52 -35

The difficulty in both cases is structural. On the addition item, 26% of the students picked 711 as a correct answer, while 27% of the students picked 23 as a correct answer on the subtraction item.

Looking ahead to grade 3, where textbooks give a very high priority to instruction on addition and subtraction, results are much better, but there is clear evidence of risk for students, especially in subtraction. Item 20, at grade 3, involves addition of 3-digit numbers where students rename both ones and tens. About 80% of the students at grade 3 answered this question correctly. On the other hand, they have considerable difficulty with subtraction. Only 64% of the students at grade 3 answered correctly on item 22, which involves subtraction of 3-digit numbers with renaming only in the ones column. It's fairly clear that these students have begun a fairly typical pattern where they do addition

much better than subtraction. The pattern in grade 4 is about the same, although it does involve more difficult questions. Here about 75% of the students at grade 4 were successful on an addition problem involving 4-digit numbers with two renamings, while 65% were successful on a 4-digit or 5-digit subtraction problem involving zeros.

Problem Solving with Addition and Subtraction

Although mathematics educators have recently become concerned with "word problems," textbook-based instruction on the matter at grade 2 is sketchy at best.

One characteristic of word problems involving addition and subtraction is that students have a disproportionate difficulty with comparison subtraction that persists all the way to upper elementary grades. Word problems are always hard to deal with, because no matter how much practice students get, it always seems that somebody can write a fairly straightforward problem that confuses many of them.

The word problems in grade 2 are mostly rebus problems in which pictures are substituted for key nouns in the problem statement. While these word problems have a really minimal context, it's possible to see an emerging pattern of differential difficulty in items A-52, where 90% of the students answered correctly, and item D-51, where 74% were correct. Parentheses indicate pictures.

ITEM A-52	ITEM D-51
Bill had 14 (cents)	Sammy has 9 (flowers).
He spent 9 (cents) for a (banana).	Opal has 18 (flowers).
He has ____(cents) left.	How many more (flowers) does Opal have?

GRADE 3

"Hard" Multiplication and Division Facts

Almost all of the question involving multiplication and division facts were answered correctly by about 75% of the students, although the problems did vary quite a bit in the kinds of facts represented. For example, about 73% of the students answered correctly on item 15, which involves a "hard" multiplication fact, while 74% answered correctly on a "medium hard" division problem (item 18).

ITEM 15

$$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$$

ITEM 18

$4\overline{)36}$

That students do better on multiplication than division is consistent with the structure of instruction; some instruction on "easy" multiplication facts is usually provided in grade 2. But students at grade 3 were still far from facile with multiplication and division facts, which is quite likely to restrict what can be accomplished in grade 4, where instruction moves solidly into multiplication and division by 1-digit and 2-digit numbers. This does not mean that results for these students aren't fairly good compared to what students nationwide can do at the end of grade 3, it simply means that about 25% of these students will experience more uncertainty than they should in learning the multiplication and division algorithms late in grade 3 and again in grade 4.

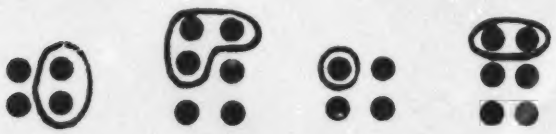
Recognition of Fractions

Students haven't yet had a lot of experience with fractions, especially in using them to represent parts of sets. Students did best

on an item where they were shown eight circles with one of them shaded. About 73% of the students correctly chose 1/8 to represent the part that was shaded, while 15% incorrectly chose 1/7. A similar item (B-41) appeared in Part 2 where students were shown nine circles with five of them shaded. Here, 63% of the students correctly chose 5/9 as the correct answer, while the rest split evenly between 4/9 and 9/5. On the other hand, only 47% answered correctly on another item where they were shown a rectangular region divided into six parts with 4 of them shaded. It may have had something to do with location--this item was the first one on the assessment to involve fractions--but about 27% of the students picked 6/4 as the correct answer. By far, the most confusing question for these students came in item 8.

ITEM 8

Which set has $\frac{1}{3}$ of the dots ringed?



This item calls for more than simple counting; students have to see the right answer choice, D, as one of three rows, rather than two out of six dots. Only 5% of the students saw the relationship, while 63% picked C as the correct choice.

Questions involving fractions are some of the most difficult for students to answer in a multiple choice format. Students who are in the initial stages of learning how to use fractions are highly prone to pick "quick fix" incorrect answer choices that feature numbers which stand out in the illustration. What this means is that students at this stage need a lot of practice if they are to consistently attend to important relationships among parts and wholes and to repress the tendency to look at features that are prominent but misleading.

Problem Solving with Multiplication and Division

The word problems at grade 3 involve straightforward applications of addition, subtraction, multiplication, and division. Students did best on problems involving addition and subtraction--renaming was not required in the computation--with around 75% answering correctly. In contrast, 80% of the students responded correctly on a computation problem involving addition and about 65% on a computation problem involving subtraction, each with two renamings. Multiplication and division word problems were a lot more difficult, in part because many students didn't know how to multiply or divide a 2-digit number by a 1-digit number. About 45% of the students could do the word problem involving multiplication. By contrast, almost 70% could do a straight computation problem involving numbers that were almost the same. Students actually did better on the division word problem than on the multiplication problem, but a closer look at the wrong-answer choices on item 36 may explain part of the difference.

ITEM 35

There are 7 days in one week.
How many days are in 52 weeks?

A. 364
B. 8
C. 365
D. 59

ITEM 36

Ted had 72 cookies. He packed them all in 6 boxes. Each box had the same number of cookies in it. How many cookies were in each box?

A. 66
B. 12
C. 78
D. 432

The correct answer, B, is very reasonable, whether or not students could divide 72 by 6, which suggests that most students were reading and understanding the problem. Results on the multiplication problem (item 35) suggest about the same thing. About 25% of the students picked C, which is the number of days in a regular year but not the number of days in 52 weeks.

GRADE 4

Recognition of Equivalent Fractions

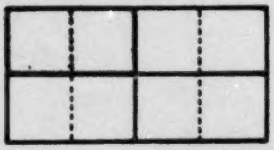
Most of the students' difficulty with fractions at grade 4 involves work with equivalent fractions and mixed numbers, and some other technical matters. For example, 72% knew that 4/10 was not equal to 12/25, but only 62% could provide the missing numerator in the following equation:

$$5/8 = ?/16.$$

About 15% picked 2 as the correct answer and another 15% picked 8. Almost 40% couldn't identify which number was the numerator in a common fraction. Students also had a lot of difficulty "seeing" two fractions represented by the same illustration in item 12, where about 33% of the students selected C, the correct response.

ITEM 12

Mark the two equivalent fractions for the shaded part of the figure.



A. $\frac{2}{4}, \frac{2}{8}$

B. $\frac{2}{4}, \frac{6}{8}$

C. $\frac{1}{4}, \frac{2}{8}$

D. $\frac{2}{8}, \frac{6}{8}$

While this item might be confusing to someone who had not had much experience with fractions, it does represent a fairly common format for practice problems in most grade 4 textbooks. Once again, some students may have difficulty with "quick fix" answers in the response choices, a difficulty they might not have if they were constructing answers from scratch. For example, about 32% picked A as the correct answer while almost 26% picked D. On the other hand, use of common fractions to represent parts of regions or sets looks much better at grade 4 than it did at grade 3. On one item, where students were given a circular region divided into eight parts with five of them shaded, 85% of them answered correctly. On a similar item at grade 3 involving a rectangle, 47% answered correctly.

Multiplication and Division by a 1-Digit Number

Questions involving multiplication and division of whole numbers, beyond multiplication and division facts, all come from a larger skill area at grade 4, called Computation Algorithms, that also includes a small number of problems on addition and subtraction. About 75% of the students could do the addition problems, which involved 4-digit numbers, and about 65% could do the subtraction item, which also involved 4-digit numbers and renaming around a "0." Two of the multiplication and division problems involved 1-digit multipliers and divisors, and the other two involved 2-digit multipliers and divisors. In all four cases, students were multiplying and dividing 3-digit numbers. About 65% of the students could multiply a 3-digit number by a 1-digit number, half of them could divide by a 1-digit number (the result was a 2-digit quotient with remainder) or multiply by a 2-digit number, and a little more than 40% could divide by a 2-digit number (2-digit quotient with no remainder). The results with 2-digit multipliers and divisors shouldn't be disturbing, because this is the first time that most students will have had an opportunity to learn how to do this kind of computation. But there should be some serious thought given to results with 1-digit multipliers and divisors. For one thing, many students, perhaps all of them in this school system, will have had some opportunity to work on this kind of multiplication and division at the end of grade 3. Besides, this kind of computation is tightly embedded in multiplication and division by 2-digit and 3-digit numbers (most programs still go to 3-digit divisors in grades 5 and 6) and in multiplication and division of decimals in grades 5 and 6.

READING ANALYSIS

The structure of instruction in Reading differs from the structure of instruction in Mathematics, and the analysis here conforms to this difference. Linguistic constructions and text characteristics of reading instruction are increasingly complicated and extended at each higher grade level, and the overall performance data reflect these features, with general percentages of 91 at grade 2, 81 at grade 3, and 75 at grade 4.

It is conventional to divide reading instruction into two parts: Decoding and Comprehension. Inherently the act of reading entails both. For pedagogical convenience, decoding instruction in textbooks is distributed over the primary grades in terms of linguistic complexity and utility. The data indicate that decoding accomplishments in this district are generally strong throughout the decoding elements at each grade. There is no strong reason or rationale for making improvement in decoding a school improvement matter in this situation.

If there is any instructional risk in reading instruction and consequently a potential for school improvement in reading in this district, it lies in the area of comprehension. So our analysis examines this potential in further detail.

Reading comprehension is conventionally organized under five general topics that are applicable to any text segment:

Identifying the main idea

Recalling details

Identifying the sequence of events

Identifying the causes and effects

Making predictions and drawing conclusions

To determine the degree of risk in the area of comprehension, our analysis examined all the comprehension items at each grade where the performance was low. For "low" we arbitrarily set a percentage of 80. The results are shown Table 1, and they require little elaboration. No single "type" of comprehension appears to stand out. The performance observed reflects the multidimensions of comprehension. The "trickier" the textual context, the more students are "tricked," but "not being tricked" is what comprehension is all about.

Clearly, these students "know how to read," and most will improve their reading skill simply as a function of increased learning opportunities with text materials in later grades. However, classroom reading materials provide for little direct instruction and practice in comprehension. The data indicate that Instructional Risk Reduction Resources in comprehension can provide a feasible means for strengthening the five pivotal reading skills to ensure that they are adequate to handle the heavier comprehension requirements that come in all school subjects in the intermediate and higher grades.

TABLE 1

COMPREHENSION ITEMS BELOW 80%

GRADE 2

Item Number: 40 Percent of Students Answering Correctly: 69%	Possessive/plural noun forms: Select a plural noun form (books) to complete a sentence. More than 25% of the students chose the singular possessive form, book's. A similar item in the grade 3 inventory also proved to be difficult for students. (See Grade 3, item number 46).
Item Number: 49 Percent of Students Answering Correctly: 70%	Answer a true/false question about a story detail. The item required students to check details from the first and second paragraphs of a three-paragraph selection.
Item Number: 56 Percent of Students Answering Correctly: 71%	Multiple-meaning word: Select the correct meaning for a word (top), given context. Two definitions of the word were mentioned in the stimulus. However, the stimulus explicitly noted which meaning was being referred to. Nevertheless, many students were unable to make the distinction between the two definitions.

GRADE 3

Item Number: 17 Percent of Students Answering Correctly: 79%	Given a two-paragraph article contrasting two kinds of fish, answer a comparison question. This item required students to recall two details contained in two separate paragraphs.
Item Number: 23 Percent of Students Answering Correctly: 59%	Given an article describing three different plants, select the plant that matches the description. Each plant was described in a separate paragraph. Nevertheless, many students were unable to organize the content.
Item Number: 24 Percent of Students Answering Correctly: 78%	Given an article describing three different plants, select the plant that matches the description. Each plant was described in a separate paragraph. Nevertheless, many students were unable to organize the content.
Item Number: 25 Percent of Students Answering Correctly: 79%	Given an article describing three different plants, select the plant that matches the description. Each plant was described in a separate paragraph. Nevertheless, many students were unable to organize the content.
Item Number: 27 Percent of Students Answering Correctly: 70%	Given a story, select a title. Two distractors proved especially attractive to students. One was a title that was too general for the given story. The other title was factually incorrect.
Item Number: 28 Percent of Students Answering Correctly: 57%	Given a story, select a phrase to answer a detail question.

Item Number: 29
Percent of Students
Answering Correctly: 79%

Answer a true/false question about a story detail.

Item Number: 30
Percent of Students
Answering Correctly: 65%

Select a sentence to answer an inference question.

One distractor proved attractive to students. This distractor might have been a plausible answer for students who missed the fairly explicit clue in the text.

GRADE 4

Item Number: 1
Percent of Students Answering Correctly: 69%

Select the meaning for an unfamiliar word (tranquil) in a story.

Item Number: 4
Percent of Students Answering Correctly: 79%

Select the meaning for an unfamiliar word (standard) in a story.

Item Number: 6
Percent of Students Answering Correctly: 59%

Select the meaning for an unfamiliar word (extensive) in a story.

Twenty percent of the students selected the distractor repairable. In the story, the word extensive is used to describe damage to a ship. Thus it appears that some students were attempting to use the story context as an aid to comprehension, although they picked up the wrong clues from the context.

Item Number: 38
Percent of Students Answering Correctly: 75%

Answer a question about a detail in a short paragraph.

Item Number: 40
Percent of Students Answering Correctly: 69%

Identify the referent for a pronoun (yours) used in dialogue context.

Item Number: 43
Percent of Students Answering Correctly: 71%

Answer a question (when) about a detail in a long story.

Item Number: 44
Percent of Students Answering Correctly: 68%

Answer a question (who) about a character in a story.

Twenty percent of the students selected a distractor that did not apply to any character mentioned in the story.

Item Number: 48 Percent of Students Answering Correctly:	64%	Select the main idea for a paragraph. More than 21% of the students selected a distractor that referred to a detail mentioned in the paragraph.
Item Number: 49 Percent of Students Answering Correctly:	60%	Select the main idea for a paragraph. Incorrect responses were divided almost evenly between two distractors that referred to details mentioned in the paragraph.
Item Number: 50 Percent of Students Answering Correctly:	70%	Answer a question (when) about the sequence of events in a story.
Item Number: 51 Percent of Students Answering Correctly:	78%	Identify the cause for a character's action in a story (cause stated explicitly in the text).
Item Number: 52 Percent of Students Answering Correctly:	75%	Answer a question (What . . . first?) about the sequence of events in a story.
Item Number: 53 Percent of Students Answering Correctly:	68%	Answer a question (What . . . next?) about the sequence of events in a story.
Item Number: 54 Percent of Students Answering Correctly:	66%	Identify the cause for a character's action in a story (cause not stated explicitly in the text).
Item Number: 55 Percent of Students Answering Correctly:	70%	Make a prediction about what will happen next in a story.

Item Number: 56
Percent of Students
Answering Correctly: 56%

Given a paragraph, draw a conclusion about the feelings of a character.

The stimulus was a description of an old woman relaxing comfortably in an apartment. The correct response to the question, "How does the old woman feel?" was content. Almost 24% of the students selected the distractor lonely, perhaps responding to the fact that no other characters were mentioned in the story.

Item Number: 57
Percent of Students
Answering Correctly: 69%

Draw a conclusion about the time of day that a story takes place.

Item Number: 59
Percent of Students
Answering Correctly: 60%

Draw a conclusion about the setting of a story.

Incorrect responses were divided almost evenly between two settings for which no evidence was presented in the story.

IMPLICATIONS FOR SCHOOL IMPROVEMENT

There is more to school improvement than attending to low test scores by exerting more effort. Sometimes the scores are all relatively good; sometimes there are more low scores than schools and teachers can attend to all at once; and sometimes the low scores will be taken care of in due course without much change in kind or quantity of effort. Elementary schooling is crowded with all kinds of things that are supposed to be important, and there is too little time to do a good job of teaching all of them to all or nearly all students. Elementary schooling is a year-by-year process where some things to be taught are more instrumental than others in the smooth flow of learning opportunities from grade to grade.

There is also more to school improvement than individualizing instruction--more than improving the efforts of some individual teachers, and more than improving the effects of these efforts on weaknesses in the performances of some individual students. There may well be students whose performances do not conform to the pattern yielded by the analysis presented here. The IAI reports on individual students that were given to the district provide a means of identifying such students who, like all other students, demand instructional attention by teachers. But there is more than this to school improvement. Simply trying harder to adjust instruction for some individual students can be expected to produce only marginal improvements for a "good" school or district as a whole.

The same logic holds at the class level. If an entire class departs substantially from the general performance pattern of the school or district (which did not happen in this district, but could happen in other "good school" situations), the IAI reports again provide the information necessary for appropriate pedagogical attention. But the attention will not likely produce other than anecdotal evidence of district improvement.

Does this mean that improvement is not feasible in a "good school" situation? Quite the contrary. The three-step school improvement logic appears fully applicable to this situation. The Instructional Accomplishment Information entailed in the first step (which we've been talking about here) provides a sound basis for describing what students are now learning.

At the second step, instructional risk reduction, the analysis presented here indicates that the application of Instructional Risk Reduction Resources are the best bet for attaining the improvement potential that is "in the cards" in mathematics and reading instruction. Teachers and students should find the implementation of IR^3 "easy" and the results should be evident as improvement to teachers, students, parents, and public.

There is "room for improvement" in the pivotal skills; however, the largest potential for school improvement appears to lie in moving to upgrade quality in the broad set of elementary schooling subjects, the E-School part of the school improvement logic. Insofar as mathematics and reading are concerned, the data indicate that E-School implementation

has a different rationale in a "good school" than in a "weak school" situation. In mathematics, for example, the introduction of hand-held calculators in the primary grades can make it possible for weak schools to make dramatic changes in the way they teach students how tocompute--students who might otherwise never develop anything but the most rudimentary computation as a useful and reliable skill. n good schools potential is already for the most part being realized. But that is no less reason for introducing the calculator; it does have high utility for instruction in other aspects of mathematics as well as subject matters other than mathematics.

Effecting school improvement by increasing the breadth and depth of elementary schooling accomplishments via E-School is not something that any district, good or weak, should attempt to do all at once. Taking advantage of the accomplishments yielded by IAI information and making sure that appropriate risk reduction activity is under way take time, and it is time well spent. A school year to make this happen is a reasonable planning time frame. Within the same time frame, E-School implementation activity could also be initiated. This is best viewed from a feasibility perspective. For example, if instruction in subjects like science, art, and music are not presently a substantial feature of schooling in a district, the best-bet instructional tool in these subjects could provide a basis for demonstrating increased breadth of quality instruction.

School improvement, whether in a good school or weak school situation, is a never-ending obligation for professional educators. The

findings of this study provide evidence that good schools as well as weak schools can become "better," and the findings also appear to provide plausible guidance on how to tell false next steps from ones that are "best bets" for successful school improvement.